

CLAIMS

1. A circularly polarizing plate comprising:
a $\lambda/4$ phase difference plate (1, 3, 37); and
5 a linearly polarizing plate (2, 4, 38) having an absorption axis forming an angle of about 45° with respect to a lagging axis of said $\lambda/4$ phase difference plate (1, 3, 37) and overlaid on a main surface of said $\lambda/4$ phase difference plate (1, 3, 37), wherein
said $\lambda/4$ phase difference plate (1, 3, 37) has reverse wavelength dispersion characteristics, and has an Nz coefficient of 1.6 or more.
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2. The circularly polarizing plate according to claim 1, wherein
said $\lambda/4$ phase difference plate (1, 3, 37) has the Nz coefficient of not less than 2.5 and not more than 3.0.
- 15 3. The circularly polarizing plate according to claim 1, wherein
said circularly polarizing plate has a substantially rectangular plane form,
said lagging axis forms an angle of about $+80^\circ$ with respect to a reference direction parallel to one side of said substantially rectangular form, and
said absorption axis forms an angle of about $+35^\circ$ with respect to said reference
20 direction.
4. The circularly polarizing plate according to claim 1, wherein
said circularly polarizing plate has a substantially rectangular plane form,
said lagging axis forms an angle of about -20° with respect to said reference
25 direction parallel to one side of said substantially rectangular form, and
said absorption axis forms an angle of about $+25^\circ$ with respect to said reference direction.

5. The circularly polarizing plate according to claim 1, wherein
said circularly polarizing plate takes a rolled form.

5 6. The circularly polarizing plate according to claim 5, wherein
said lagging axis forms an angle of about $+80^\circ$ with respect to said reference
direction defined by a longitudinal direction, and
said absorption axis forms an angle of about $+35^\circ$ with respect to said reference
direction.

10 7. The circularly polarizing plate according to claim 5, wherein
said lagging axis forms an angle of about -20° with respect to said reference
direction defined by a longitudinal direction, and
said absorption axis forms an angle of about $+25^\circ$ with respect to said reference
direction.

15 8. A vertical alignment type of liquid crystal display panel comprising the
circularly polarizing plate according to claim 1.

20 9. A circularly polarizing plate comprising:
a $\lambda/4$ phase difference plate (101, 137) having reverse wavelength dispersion
characteristics and an Nz coefficient of 1.6 or more; and
a linearly polarizing plate (102, 138) overlaid on a main surface of said $\lambda/4$ phase
difference plate (101, 137), wherein
said circularly polarizing plate has a rectangular plane form,
25 said $\lambda/4$ phase difference plate (101, 137) has a lagging axis forming an angle of
about $+90^\circ$ with respect to a reference direction parallel to one side of said rectangular
form, and
said linearly polarizing plate (102, 138) has an absorption axis forming an angle

of about +45° with respect to said reference direction.

10. The circularly polarizing plate according to claim 9, wherein
said $\lambda/4$ phase difference plate (101, 137) has the Nz coefficient of not less than
5 2.5 and not more than 3.0.

11. A vertical alignment type of liquid crystal display panel comprising the
circularly polarizing plate according to claim 9.

10 12. A circularly polarizing plate comprising:
a $\lambda/4$ phase difference plate (107) having reverse wavelength dispersion
characteristics and an Nz coefficient of 1.6 or more; and
a linearly polarizing plate (108) overlaid on a main surface of said $\lambda/4$ phase
difference plate (107), wherein
15 said circularly polarizing plate takes a rolled form,
said $\lambda/4$ phase difference plate (107) has a lagging axis forming an angle of about
+90° with respect to a reference direction defined by a longitudinal direction, and
said linearly polarizing plate (108) has an absorption axis forming an angle of
about +45° with respect to said reference direction.

20 13. The circularly polarizing plate according to claim 12, wherein
said $\lambda/4$ phase difference plate (107) has the Nz coefficient of not less than 2.5
and not more than 3.0.

25 14. A method of manufacturing a circularly polarizing plate comprising:
an adhering step of adhering a main surface of a $\lambda/4$ phase difference plate (5, 7)
taking a rolled form and having an Nz coefficient of 1.6 or more and a main surface of a
linearly polarizing plate (6, 8) taking a rolled form together while keeping longitudinal

directions of said plates parallel to each other, wherein

5 said adhering step uses said $\lambda/4$ phase difference plate (5, 7) having a lagging axis forming an angle of about $+80^\circ$ with respect to said longitudinal direction, and said linearly polarizing plate (6, 8) having an absorption axis forming an angle of about $+35^\circ$ with respect to said longitudinal direction.

15. The method of manufacturing the circularly polarizing plate according to claim 14, wherein

10 said $\lambda/4$ phase difference plate (5, 7) has reverse wavelength dispersion characteristics.

16. The method of manufacturing the circularly polarizing plate according to claim 14, wherein

15 said adhering step is performed while adhering a transparent protection plate to a main surface of said linearly polarizing plate (6, 8) opposite to the main surface to be adhered to said $\lambda/4$ phase difference plate (5, 7).

17. The method of manufacturing the circularly polarizing plate according to claim 14, further comprising:

20 a step of winding into a roll form after said adhering step.

18. The method of manufacturing the circularly polarizing plate according to claim 14, further comprising:

25 a step of cutting off a substantially rectangular form having one side substantially parallel to said longitudinal direction after said adhering step.

19. A method of manufacturing a vertical alignment type of liquid crystal display panel comprising:

a circularly polarizing plate adhering step of adhering a circularly polarizing plate (15) to a main surface of a large liquid crystal display unit base (11) provided with a plurality of individual liquid crystal display units (10) each having a closed space between two substrates filled with liquid crystal; and

5 a step of cutting off said individual liquid crystal display units (10) by cutting said large liquid crystal display unit base after said circularly polarizing plate adhering step, wherein

said circularly polarizing plate adhering step uses the circularly polarizing plate (15) manufactured by the manufacturing method according to claim 14.

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20. The method of manufacturing the vertical alignment type of liquid crystal display panel according to claim 19, wherein

said circularly polarizing plate adhering step includes:

15 a step of adhering a plurality of said large liquid crystal display unit bases (11) in the longitudinal direction of said circularly polarizing plate (15) taking a rolled form, and a step of cutting off said circularly polarizing plate (15) along an outer periphery of said large liquid crystal display unit base (11).

21. A method of manufacturing a circularly polarizing plate comprising:

20 an adhering step of adhering a main surface of a $\lambda/4$ phase difference plate (5, 7) taking a rolled form and having an Nz coefficient of 1.6 or more and a main surface of a linearly polarizing plate (6, 8) taking a rolled form together while keeping longitudinal directions of said plates parallel to each other, wherein

25 said adhering step uses said $\lambda/4$ phase difference plate (5, 7) having a lagging axis forming an angle of about $+25^\circ$ with respect to said longitudinal direction, and said linearly polarizing plate (6, 8) having an absorption axis forming an angle of about -20° with respect to said longitudinal direction.

22. The method of manufacturing the circularly polarizing plate according to claim 21, wherein

said $\lambda/4$ phase difference plate (5, 7) has reverse wavelength dispersion characteristics.

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23. The method of manufacturing the circularly polarizing plate according to claim 21, wherein

said adhering step is performed while adhering a transparent protection plate to a main surface of said linearly polarizing plate (6, 8) opposite to the main surface to be adhered to said $\lambda/4$ phase difference plate (5, 7).

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24. The method of manufacturing the circularly polarizing plate according to claim 21, further comprising:

a step of winding into a roll form after said adhering step.

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25. The method of manufacturing the circularly polarizing plate according to claim 21, further comprising:

a step of cutting off a substantially rectangular form having one side substantially parallel to said longitudinal direction after said adhering step.

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26. A method of manufacturing a vertical alignment type of liquid crystal display panel comprising:

a circularly polarizing plate adhering step of adhering a circularly polarizing plate (15) to a main surface of a large liquid crystal display unit base (11) provided with a plurality of individual liquid crystal display units (10) each having a closed space between two substrates filled with liquid crystal; and

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a step of cutting off said individual display units (10) by cutting said large liquid crystal display unit base (11) after said circularly polarizing plate adhering step, wherein

said circularly polarizing plate adhering step uses the circularly polarizing plate (15) manufactured by the manufacturing method according to claim 21.

5 27. The method of manufacturing the vertical alignment type of liquid crystal display panel according to claim 26, wherein

said circularly polarizing plate adhering step includes:

a step of adhering a plurality of said large liquid crystal display unit bases (11) in the longitudinal direction of said circularly polarizing plate (15) taking a rolled form, and

10 a step of cutting off said circularly polarizing plate (15) along an outer periphery of said large liquid crystal display unit base (11).

28. A method of manufacturing a circularly polarizing plate comprising:

15 an adhering step of adhering a main surface of a $\lambda/4$ phase difference plate (107) taking a rolled form and having an Nz coefficient of 1.6 or more and a main surface of a linearly polarizing plate (108) taking a rolled form together while keeping longitudinal directions of said plates parallel to each other, wherein

20 said adhering step uses said $\lambda/4$ phase difference plate (107) having a lagging axis forming an angle of about $+90^\circ$ with respect to said longitudinal direction, and said linearly polarizing plate (108) having an absorption axis forming an angle of about $+45^\circ$ with respect to said longitudinal direction.

29. The method of manufacturing the circularly polarizing plate according to claim 28, wherein

25 said $\lambda/4$ phase difference plate (107) has reverse wavelength dispersion characteristics.

30. The method of manufacturing the circularly polarizing plate according to claim 28, wherein

said adhering step is performed while adhering a transparent protection plate to a main surface of said linearly polarizing plate (108) opposite to the main surface to be adhered to said $\lambda/4$ phase difference plate (107).

5 31. The method of manufacturing the circularly polarizing plate according to claim 28, further comprising:

a step of winding into a roll form after said adhering step.

10 32. The method of manufacturing the circularly polarizing plate according to claim 28, further comprising:

a step of cutting off a substantially rectangular form having one side inclined with respect to said longitudinal direction after said adhering step.

15 33. A method of manufacturing a vertical alignment type of liquid crystal display panel comprising:

a circularly polarizing plate adhering step of adhering a circularly polarizing plate (15) to a main surface of a large liquid crystal display unit base (11) provided with a plurality of individual liquid crystal display units (10) each having a closed space between two substrates filled with liquid crystal; and

20 a step of cutting off said individual display units (10) by cutting said large liquid crystal display unit base (11) after said circularly polarizing plate adhering step.

34. The method of manufacturing the vertical alignment type of liquid crystal display panel according to claim 33, wherein

25 said circularly polarizing plate adhering step uses the circularly polarizing plate (115) manufactured by said manufacturing method according to claim 28.